500.38891VV2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): NAKAMOTO, et al.

Filed: January 31, 2002

For: PROCESS FOR CONTINUOUSLY PRODUCING POLYBUTYLENE TEREPHTHALATE

CLAIM FOR PRIORITY

Assistant Commissioner for Patents
Washington, D.C. 20231

March 8, 2002

Sir:

Under the provisions of 35 USC §119 and 37 CFR §1.55, Applicants hereby claim the right of priority based on Japanese Patent Application No. 2000-070986, filed in Japan on March 9, 2000.

A certified copy of the above-referred-to Japanese Patent Application was submitted on August 22, 2000, in prior application Serial No. 09/642,587, filed August 22, 2000.

Respectfully submitted,

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正本

裝 訂 線

經濟部智慧財產局專利核駁審定書

受文者：日立製作所股份有限公司（代理人：林志剛 先生）

地址：台北市南京東路二段一二五號七樓

發文日期：中華民國九十一年三月二十日

發文字號：（九一）智專二（六）01079字第〇九一八三〇〇四七二三號

一、申請案號數：〇八九一一七一一七

二、發明名稱：用以製造聚對酞酸丁二酯之方法及裝置

三、申請人：

名稱：日立製作所股份有限公司

地址：日本

四、專利代理人：

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五、申請日期：八十九年八月二十四日

六、優先權項目：

1 2000/03/09 日本2000-070986

專利分類IPC(7)…C08G 63/183, 63/78, C07C 67/08, 69/90

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09183004723

七、審查人員姓名：謝紹銓　委員

八、審定內容：

主文：本案應不予專利。

依據：專利法第二十條第一項前段、第二十條第一項第一款、第二十二條第四項。

理由：

（一）本案係一種聚對苯二甲酸丁二酯PBT之製法及其裝置，其特徵是第1槽（酯化）及第2槽（預聚）設計不需外界動力、無攪拌葉片，並有鈦觸媒與促進劑可延後添加，具有反應槽數少、聚合度高等效果，可供生產PBT/PET等之用。

（二）經查本案強調利用熱對流攪拌，特別是第1槽內置「排管狀」加熱器（230℃）、第2槽（255℃）為內外雙重槽附加交換器之結構（已見於JP1076102）、第3、4槽（245℃）則沿用其他已知水平式槽體，視「後聚」需要決定槽數；另實施例使用「Organic Ti」觸媒併用磷(P)保護劑，Ti有效量100ppm，得IV=0.85。

（三）經檢索PET方法及裝置得知JP10316747（日立/1998.12.2）已將上述完全相同之圖示、結構裝置及觸媒應用於PET且包含PBT（見於說明書、申請專利範圍中），本案僅PBT之應用，不具新穎性。

（四）本案申請專利範圍第7、8、9項「方法」範圍太廣，欠缺第1項中裝置之本案技術特徵（第1槽及第2槽），顯然無法使熟習該項技術者瞭解其內容並據以實施，不具

產業利用性。

（五）檢附前述引證資料之首頁影本，如附件。

據上論結，本案不符法定專利要件，爰依專利法第二十條第一項前段、第二十條第一項第一款、第二十二條第四項，審定如主文。

局長 陳明邦

依照分層負責規定授權單位主管決行

如不服本審定，得於文到之次日起三十日內，備具再審查理由書一式二份及規費新台幣陸仟元整（專利說明書及圖式合計在五十頁以上者，每五十頁加收新台幣五百元，其不足五十頁者以五十頁計），向本局申請再審查。

Your Ref: E5370-03 C6
Our Ref: 737878
Appln. No.: 89117117
Present Stage: Preliminary-examination
Type of Notice: Decision of Rejection
Cited Reference: Y

[Translation of the Notice]

Syllabus:

The present application should not be granted a patent.

Basis:

The front part of Paragraph 1 of Article 20, Item 1 of Paragraph 1 of Article 20, and Paragraph 4 of Article 22 of the Patent Law.

Reasons:

1. The present application relates to a process and an apparatus for producing polybutylene terephthalate (PBT). The features of the present application are that in the apparatus the first reactor (for esterification) and the second reactors (for prepolymerization) have no stirring blades operated by an external power source, that the addition of the titanium catalyst and promoter can be postponed, that the number of reactor vessels can be minimized, and that PBT/PET degrees of polymerization obtained .

2. It is emphasized in the present application that the effect of stirring is achieved by utilizing convection heat transfer. In particular, the first reactor vessel (at a temperature of 230 °C) is equipped with a calandria type heat exchanger, the second reactor vessel (at a temperature of 255 °C) is in a jacket structure and equipped with a heat exchanger (note: such type of reactor vessel has been disclosed in JP 1076102), and the third and fourth reactor vessels (at a temperature of 245 °C) are conventional horizontal cylindrical vessels, with the number thereof depending on the post-polymerization to be carried out. Next, in the Examples an organic Ti catalyst is

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used in combination with a phosphorous type stabilizer, wherein the effective amount of Ti used is 100 ppm, and an intrinsic viscosity of 0.85 dl/g is achieved.

3. It is found that in the present application the drawings and the apparatus, catalysts and their use in PET production all have been disclosed in the specification and claims of JP 10316747 (Hitachi / December 2, 1998), in which the production of PBT is also involved. The present application is merely focused on the production of PBT and does not have novelty.

4. The processes claimed in claims 7, 8 and 9 cover too broad a scope in which the technical feature of the present application, i.e., the first and second reactors in the apparatus of claim 1, is not mentioned. Therefore, the claimed processes can not be understood and implemented by people skilled in the art and is not industrially applicable.

5. Enclosed is a copy of the front page of the cited references.

In conclusion, the present application fails to conform to the statutory patent requirements and therefore it should not be granted a patent in accordance with the front part of Paragraph 1 of Article 20, Item 1 of Paragraph 1 of Article 20, and Paragraph 4 of Article 22 of the Patent Law.

[TIPLO's Remarks]

1). Digest of the Notice:

The examiner's rejection is based on the grounds that the apparatus and processes of the present application are not novel over the cited JP 1076102 and JP 10316747, and that claims 7, 8 and 9 are not concrete enough.

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2). Related Legal Provisions:

It is stipulated in the front part of Paragraph 1 of Article 20 of Taiwanese patent law that any industrially applicable invention may obtain a patent therefor in accordance with this Law.

It is stipulated in Item 1 of Paragraph 1 of Article 20 of the patent law that an invention may not obtain a patent if, prior to applying for patent thereof, it has been published or publicly used; provided that this restriction shall not apply if the publication or public use is made for the purpose of research or experiment and an application for patent has been filed within six months from the date of such publication or public use.

In Article 22, Paragraph 4 says that a claim shall illustrate the subject matter, technical content and characteristic feature of the invention.

3). Analysis of the Citations and Suggestions:

1. The evaporator of the cited JP 10-76102 comprises a downcommer installed in the vertical direction, a spiral guide fitted to the outside of the downcommer, ring-like projections fitted to the inside of the downcommer. Liquid to be treated is ascended outside the downcommer while a turning flow is caused in the liquid to be treated, and it is turned into a thin layer and is caused to descend while it climbs over the ring-like projections inside the downcommer successively. In each of Figs. 1~3 of the present application, the heat exchanger 15 in the second reactor 14 is a shell and tube type heat exchanger. Though it may be possible that the heat exchanger 15 is similar to the one in the aforesaid evaporator of JP 10-76102, the present application is not claiming such

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a heat exchanger but instead is claiming an apparatus which comprises the special heat exchanger as a part in one of the reactors. Hence the novelty of the present application should not be negated by JP 10-76102.

2. It seems that in the present application the apparatus shown in Fig. 1 is very similar to the one shown in Fig. 1 of JP 10-316747, and also the process of claim 7 overlaps with the one in claim 1 of this JP. In order to overcome the rejection, please give us your expertise as to any distinctions between the present application and JP 10-316747, or please delete from the present application the process and/or apparatus claims which overlap with this JP.

3. In response to the examiner's opinion in item 4 of the above "Reasons" section, we suggest adding in claims 7, 8 and 9 a description that the first and second reactors in the apparatus employed in the claimed processes have no stirring blades operated by an external power source.

Timely receipt of your instructions and comments for responding will be greatly appreciated.

Handled by: S. L. Liu
Supervisor: C. Y. Lin
DDN:886-2-25086624